REMARKS

Applicant gratefully acknowledges the Examiner's allowance of claims 12, 14, 16, 22, 24 and 26. With respect to the Examiner's rejections concerning the remaining claims, Applicant respectfully requests reconsideration in view of the foregoing amendments and the remarks hereinbelow.

Prior to addressing each of the Examiner's rejections in particular, Applicants first note the Examiner's comment in the present office action that "the term "genetic", by itself, cannot be interpreted as "genetic programming" as applicants claimed in the response". Even if the Examiner is correct in this contention, Applicants respectfully note that this comment is irrelevant since, in the present claims, the term "genetic" is not used by itself. For example, in claim 1, the term "genetic" is used to modify the word "engine". As Applicants observed in the previous response,

> The term "engine" is used in an ordinary sense in relation to computer programs:
>
> **'engine**
>
> '1. the part of a computer program that implements a special technique' (Dictionary of Computer and Internet Terms, 8th ed., Barron's Educational Series, Inc., (2003), page 171)

Since, as seen above, the term "engine", as used in the present application, refers to a portion of a computer program, it follows that the term "genetic", which modifies the term "engine", also necessarily refers to computer programs. Hence, the phrase "genetic engine" necessarily refers to "genetic programming".

Applicants contention in this regard is fully supported by the present specification. Thus, at page 15, Lines 1-19 of the present application, it is noted that:

> Figure 7 illustrates the overall architecture of a page layout system 124 according to an illustrative embodiment of the present invention. ... There are two main system modules corresponding to the tasks outlined above. The Page Creator Module 126 is responsible for assigning each image to an album page. The page groupings created by this module are passed to the Image Placement Module 132, which positions the images on each individual page. Page layouts are specified in a textual form using an Extensible Markup Language (XML) format. Details about this format are available from: *World Wide Web Consortium, Extensible Markup Language (XML) 1.0,* http://www.w3.org/xml, *February 1998,* the contents of which are hereby incorporated by

reference thereto. These textual descriptions are interpreted by a XML compiler 138 that creates composite images corresponding to each completed album page. Both the Page Creator Module 126 and Image Placement Module 132 make use genetic algorithms and consists of their own separate genetic engines, 128 and 136 respectively. More particularly, the Page Creator Module 126 comprises a *genetic engine* 128 and a page evaluation module 130, *both of which are implemented in software on a processor as is understood by those of ordinary skill in the art*. The Image Placement Module 132 comprises its own *genetic engine* 136 and a layout evaluation module 134, *also implemented in software*. In an illustrative embodiment, the present invention is implemented using Visual C++ 6.0 running under Windows 95/98/NT. Although porting to other platforms is readily feasible, as well as implementation in other programming languages and operation on other platforms, understood by those of ordinary skill in the art. [emphasis added]

It is thus clear that, when the present claim language is construed in light of the disclosure, one skilled in the art would understand that the term "genetic engine" is being used to refer to genetic programming.

Reconsideration of the Examiner's rejection of claims 1-9, 13, 15, 17-21, 23, 25 and 27 under 35 U.S.C. § 102(e) as being anticipated by U.S. 6,222,947 (Koba) is respectfully requested.

In order to anticipate a claimed invention, a cited reference must teach each and every element of the claimed invention. With respect to claim 1, Koba does not anticipate the claimed invention because it does not teach, *inter alia*, the element recited in claim 1 of "a first genetic engine operable to execute genetic evolution calculations on a first genetic population of image criteria".

The Examiner cites Col. 6, Lines 43-59 of Koba as teaching this element of the claimed invention. However, this section of Koba merely discloses an algorithm capable of analyzing the layout of photographs in an album that would result from a user preference (e.g., 3 photos per page) and then rearraging the photographs to more evenly distribute blank space. In the specific example given by Koba in this section, a user preference parameter of 3 photos per page would result in 7 photographs being distributed across 3 album pages, which leaves the final page with just one photo. The algorithmn recognizes the fact that this distribution will cause excessive blank space on the final page and rectifies the

situation by readjusting one of the pages to accommodate 4 photographs (i.e., by reducing an image designated by the user as having a low degree of importance).

However, the approach of Koba involves neither a genetic engine nor genetic evolution calculations. As noted above, the term "genetic engine" implies genetic programming. In genetic programming (and in the genetic evolution it implements), solutions are generated randomly (e.g., by mutation and cross-breeding) and the solution search is narrowed based on solution fitness (solution fitness may be gauged, for example, by user input). Hence, the solution population "evolves" to one or more solutions that best satisfy the fitness criteria, much as organisms evolve in a Darwinian model to a form that is best suited to their environment. Since the evolution process involves an element of randomness, any two implementations of this process may differ, and need not arrive at the same solution. Hence, the particular solution that the system arrives at is not predetermined. By contrast, there is nothing random in the approach of Koba. To the contrary, in the approach of Koba, once all of the user preferences have been specified, the solution is predetermined, because it is a function only of variables whose values have already been fixed.

Moreover, claim 1 requires that the image criteria and image placement evolve, since each is subject to the operation of its own genetic engine that executes genetic evolution calculations upon it. As noted above, this process includes the generation of random layout solutions. By contrast, in the approach of Koba, there is no evolution; rather, Koba merely selects a predetermined layout from a set of fixed choices.

Koba also does not anticipate claim 1 because it does not teach the element of "an image placement module having a second genetic engine operable to execute genetic evolution calculations on a second genetic population of page layout criteria". While Koba does teach an image placement algorithmn, this algorithmn is not equipped with a genetic engine and hence, for the reasons noted above, does not operate to execute genetic evolution calculations.

For the sake of completeness, Applicants note that that Koba mentions the use of "random parameters" in the method taught therein. See, e.g., Col. 7, Lines 31-41 of Koba. However, the randomness referred to here has to do with the succession of layouts. Thus, as shown in FIG. 5F, the method of Koba can operate to produce an album in which the layouts of the pages are "random", in

the sense that the layout of any particular page is independent of the layout of any other page. However, the layouts themselves are not randomly generated by the operation of a genetic engine as is the case in the system of claim 1. Indeed, the layouts in Koba are not generated at all, but are instead selected from a fixed set of pre-existing templates. Thus, at Col. 3, Lines 27-31, Koba teaches "an external storage device in which ... layout templates, background images, and the like *which are prepared in advance* are stored." [emphasis added]. Applicant notes that this interpretation is consistent with the problem Koba set out to solve. In particular, as explained in the background section of Koba, the reference sought to avoid the time and effort involved when a user is required to manually select the template to be used for each page (Col. 1, Lines 27-31), but also sought to produce a more attractive result than that obtained when a single layout pattern is used for all of the pages in the album (Col. 1 Lines 33-34).

With respect to claims 2, the method recited in this claim includes the step of "evaluating a grouping of the image objects for distribution into a number of album pages according to a fitness function's parameters of a genetic engine". Hence, this claim requires that the distribution of image objects being evaluated is a distribution according to a genetic engine. As previously noted, however, Koba does not teach the element of a genetic engine. Hence, Koba cannot anticipate claim 2.

With respect to claim 3, the method recited in this claim includes the step of "evaluating the 'x' and 'y' position coordinates, scale, and rotation of each of the input images objects within a page according to a fitness function's parameters of a genetic engine". Hence, as with claim 2, this claim requires that the distribution of image objects being evaluated is a distribution according to a genetic engine. As previously noted, however, Koba does not teach the element of a genetic engine. Hence, Koba cannot anticipate claim 3.

With respect to claims 4-7, the Examiner notes that these claims are rejected under the same rationale as claim 1. However, claims 4-6 require the element of a genetic engine operable to evolve a genetic population. As previously noted, however, Koba does not teach the element of a genetic engine, nor does it teach the step of evolving a genetic population as required by claims 4-7.

With respect to claims 8-9, 13, 15, 17-21, 22-23, 25 and 27, as noted above, Koba does not teach the step of evolving a genetic population. Hence, Koba cannot anticipate these claims. Moreover, with respect to claim 8 in particular, Koba also does not teach the step of repeating the evolving and calculating steps if the album score fails to meet an album threshold value. The portion of Koba cited to by the Examiner in this respect (Col. 7, Lines 37-47) does refer to a repetitive algorithmn; however, the algorithm being repeated is the page layout processing, and repetition of this algorithm is conditioned solely on whether or not all of the pages in the album have been processed. Hence, this approach does not involve evolution as that term is used in the present application..
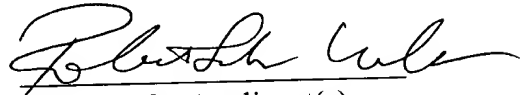
Reconsideration of the Examiner's rejection of claims 10 and 11 under 35 U.S.C. § 103(a) as being unpatentable over U.S. 6,222,947 (Koba) is respectfully requested.

In order to render a claimed invention obvious, a cited reference must teach or suggest each element of the claimed invention. However, as noted above in reference to the novelty rejection, Koba does not teach the element of a genetic engine or the element of of evolving a population of solutions. Indeed, Koba does not mention genetic algorithms at all. Hence, there is no teaching or suggestion in Koba to apply the principles of genetic algorithms to the assignment of images to an album page as required by claim 8, from which claims 10 and 11 depend. Hence, Koba does not render claims 10-11 obvious.

Support for new claim 28 added with this response can be found, for example, in Fig. 2, in the text at Page 12, Lines 13-14, and in the claims as originally filed. Support for new claims 29-32 can be found, for example, at Page 11, Lines 24-25 and in Figs. 4 and 5.

It is respectfully submitted, therefore, that in view of the above amendments and remarks, that this application is now in condition for allowance, prompt notice of which is earnestly solicited.

Respectfully submitted,

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